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Implications for Network-Centric Warfare

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Foreword

As US Special Operations Command (USSOCOM) develops strategic concepts for synchronizing the military dimensions of the Global War on Terrorism it will need to address a full range of factors that describe the strategic environment, centers of gravity, and operational approaches for pressing the counterterrorism fight. One key factor is the construct of a global terrorist network and what that implies for the ways that US joint forces must organize and operate. In this paper, Dr. Jessica Glicken Turnley helps the planner to consider the challenge of how a bureaucratically organized force might assess a *network-centric* enemy and develop appropriate strategies.

Implications drawn here by Dr. Turnley relate to USSOCOM strategic priorities for winning the war on terror and ensuring a competitive advantage in the future. These priorities include leading the planning for the DoD Global War on Terrorism as well as command-specific counterterrorism operations. The paper also implies considerations for force readiness and developing USSOCOM's next-generation capabilities.

Dr. Turnley advises that we are facing the challenge of responding at once with force structures appropriate for geographically based adversaries and network based adversaries. The US military must develop the ability to quickly change and redefine force structure, force

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development, and force management techniques, and Dr. Turnley believes that this may be one of the key enablers of the future force.

This is essential for success because the threats confronting SOF in the mid term will be transnational and asymmetric in nature, and there are regional dangers and security issues that SOF will confront as well. Threats include issues of terrorism, homeland defense, institutional dysfunction and instability, drug and arms trafficking, and information war. In addition SOF are concerned with operational

issues concerning the military potential of regional state actors opposed to US interests. Our ability to identify the kind of threat we are facing, communicate rapidly and respond to threat elements with the appropriate force structure will define strategic success.

Lieutenant Colonel Michael C. McMahon
Director, Strategic Studies Department
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Executive Summary

The National Military Strategic Plan for the War on Terrorism has as one of its elements the need to “disrupt terrorist networks.” The same language is used in operational planning exercises when developing constructs to fight that adversary. The differences between network- or relationship-based groups (social networks) and rule-based groups (bureaucracies) are more than academic. There are implications for command and control, for planning and schedules, for training, and for many other aspects of operations. This study explores the theoretical differences between networks and rule-based organizations. It then discusses the operational implications of these differences, and finally suggests some implications for the military as it plans for and executes the Global War on Terrorism.

Social Networks

Social networks are composed of two primary elements: actors and the relationships or linkages among them. Understanding a social network means developing an understanding of the patterns or structure of these relationships, and the influence of these structures on the actors in the networks. This assumes that actors are interdependent—not independent, autonomous units. It also implies that the researcher can achieve full understanding of a given actor’s actions if the researcher can map all of that actor’s relationships with other actors. This also implies that actors are understood as functions of their relationships.

Identity is described in terms of the strength of the links among actors, and means that actors do not define themselves independent of others. This means that a network can be described without reference to geography, as the defining features of the network—the relationships—are not geospatially located. Finally, this means that any description of a network is a snapshot at a point in time of an ever-changing pattern—and that the dynamics of change are not contained in the network description.

Bureaucracies

Bureaucracies or rule-driven organizations are at the other end of the organizational spectrum. Bureaucracies are systems of rules. These rules define offices or positions that are occupied by persons, and their associated activities. Persons exist separate from the structure, and are interchangeable from the perspective of the various offices. The criteria for occupying an office are based on merit or performance. Rules exist over time, and ensure that the performance

of any person in the office will be the same as that of his predecessor and successor. Stability and routine have become well-known hallmarks of bureaucracies. The purpose for an office is defined by the rule set, as is the organizational purpose. Any person's accountability is to the rule set for his office, to his job—not to the organizational purpose. In this way, authority and legitimacy are objectively defined, and exist independent of individuals.

Networks vs. Bureaucracies

The key distinguishing difference between bureaucracies and social networks is the relationship of the actor to the structure. In a network, any given actor is a function of the intersection of relationships and so is unique. In a bureaucracy, actors are methodologically equal, and move in and out of differently defined functions. Actors thus are differentiated by factors outside the organizational structure, which allows analytic place for ideological frames such as religion and politics.

Relationship-based groups—groups that are defined by the ties among individuals—are very effective in environments where conditions external to the group are changing rapidly and variable responses at the tactical level are necessary. They also are effective recruiting structures, and work well in social spaces that are geography-independent (such as the World Wide Web). Bureaucracies, on the other hand, are very effective in developing and implementing a consistency of response over time and space and in moving organizations toward strategic goals. Bureaucracies also are well suited for functionally complicated tasks that require a high division of labor, such as the logistics associated with moving large amounts of materiel or personnel over long distances. Bureaucracies also are effective at assigning accountability to individuals, rather than locating it at the group level. This is important where outcomes like security or safety are valued.

Bureaucracies and social networks as described here are examples of “pure” types. No organization in the real world functions as such. All exhibit some characteristics of both, falling somewhere along a spectrum. The challenge for those of us involved in organizational development, management, or change is to understand the appropriate point on the spectrum of organizational types for a particular organization. “Appropriate” is a function of task and environment, both of which are functions of time.

Moving Toward Network-Centric Warfare

The adversary in the Global War on Terrorism is understood primarily in network terms. As such, the US military has instituted its

own move toward network-centric warfare and has instituted an Office of Force Transformation to move the military from a bureaucratic to a network-structured organization. There are certain implications of this transformation that are worth spelling out.

Issues of command and control are of central concern in a military environment. In a bureaucracy, any occupant of any office will have some reasonable confidence in the way in which individuals in other offices will respond to incoming information. One thus can task other offices to do certain things and have some reasonable level of confidence that important ethical boundaries will not be violated. In a network, the response to a piece of incoming information depends upon the nature of the relationship of the individual person who is the sender with the individual person who is the receiver. One cannot task a network in the narrow sense of the term. One must persuade individuals who make up the network, based on the personal relationship one has with each of them.

The changes in command and control required by immersion in a network-based rather than a rule-based structure will necessitate significant changes in attitude and values for the US military. These will be reflected in changes in the language used to discuss activities, allies, and the adversary. US personnel must recognize the existence and legitimacy of the multiple agendas of the players in the network. They must be able to develop an approach that emphasizes leveraging points of commonality, rather than one which assumes the obedience to orders that would result from the engagement with a common rule set for behavior. This will require a willingness to discuss with other players the need for action, and avoid the assumption that there is a universal sense of urgency based upon a common goal. US military participants must develop the flexibility and creativity required to simultaneously attain their own ends while demonstrating the value of those activities to others who have different goals. This means an equal emphasis must be placed on listening as is on telling.

Since networks are based on the ties among people, not offices, it is important that individuals develop longevity within the network. Trust in another person (vice trust in an office) is an attribute essential to the effective functioning of relationship-based organizations. Trust in people develops over time. The investment of time in developing personal relationships that can later be used to attain desired ends may be one of the most difficult attitudinal changes required for results-oriented Americans.

These attitudinal changes and consequent changes in language use will require new training programs and modification of exist-

ing regimes. A related needed skill will be the ability to recognize the basis on which key relationships are formed. The operator must be trained to recognize the clues that identify these relationships of interest, understand how they fit together into networks of relationships, and how he (or she) fits into that network.

Ideology plays a role in developing efforts to counter terrorism in a way it did not in the Cold War. Purely network-based approaches do not directly address ideology. With their focus on descriptions of relationships and their methodological insistence that relationships define the individual, pure network approaches do not give us insight into the dynamics that lead to the creation or development of those relationships. An important part of the training of troops on the ground, military planners, and leaders will be background on the complex interaction of cultural dimensions that underlie and shape relationships, keeping in mind that no relationship between individuals is uni-dimensional.

Ideology can also be an important weapon in the Global War on Terrorism. If our goal is to undo a set of relationships, we must realize that there will be a new set constructed in its place. The new set proposed must support US strategic interests while not directly countering the core values of the target populations. Training US forces to recognize the core cultural values of others and to express targeted US values in an inoffensive fashion is a non-trivial and difficult exercise.

Several of the issues we discussed above will have impacts on planning. There will be impacts on time scales, on the types of people who need to be engaged, and on the types of activities to include. This includes issues of geography. Most of the clues to relationship identification discussed above are culturally based, and so are location-specific. However, the relationships themselves do not exist in space. The hard assets or network enablers which help to create them may have geographic coordinates, as do the individuals who engage with these enablers and who compose the nodes of the network. The tension between a geography-free network and the important local and cultural components of the nodes (individuals or network enablers) is one that will need to be managed in a planning exercise. This will intersect with the tension between organizing US forces as networks and as more strategically oriented, rule-driven structures.

The incorporation of networks into planning considerations will have significant impacts on schedule, as it will both stretch and compress time horizons. Developing the relationships on which social networks are built takes time. At the same time, networks can be mobilized very quickly and can change direction much faster than

rule-based organizations. Any planning process we develop must be highly flexible and able to accommodate change. This may require that authority in certain areas devolve to lower levels than it currently resides. This is another significant attitudinal change required.

The key for the military is to recognize the complexity of the adversary and to respond with a complex force. Clearly, new skill requirements will have ramifications through recruitment and promotion strategies, as well as on training regimes. If the military is seeking individuals who can lead through persuasion rather than tasking, it will need to look for and develop individuals with skill sets different than those required in a Cold War force. The importance of the role trust plays in networks also means changes in personnel rotation policies and the role they play in promotion. The military will need to be able to foster and support the development of networks without co-opting them—and without seeing them as a threat to formal lines of command. A look at innovation in the private sector, including skunkworks and more recently proposed models of ambidextrous organizations¹ which incorporate both networks and formal management structures, might provide insight into managing this tension for the military community.

The ability to quickly change and redefine force structure, force deployment, and force management techniques may be one of the key enablers of the military of the future. The challenge, therefore, is not to identify the right force structure, but to be able to identify, communicate, and respond to those elements of time and space that define the appropriate force structure.

Implications for Network-Centric Warfare

Jessica Glicken Turnley

Introduction

This study explores the theoretical differences between networks and rule-based organizations. It then discusses the operational implications of these differences, and finally suggests some implications for the military as it plans for and executes the Global War on Terrorism.

The National Military Strategic Plan for the War on Terrorism (NMSP-WOT) has as one of its elements the need to “disrupt terrorist networks.”² The same language is used in operational planning exercises based on the NMSP-WOT when referencing the adversary as well as when developing US national constructs to fight that adversary. This paper suggests that if the military is to truly engage in network-centric warfare, it must recognize the nature of a network and the implications of such an approach on military operations.

The differences between network- or relationship-based groups and rule-based groups or bureaucracies are more than academic. These differences begin with the ways in which actors relate to the collectivity and ways in which they can be controlled, managed, or directed by the group. The differences extend as far as definitions of ethical behavior and ways in which new ideas and innovations are introduced. As a consequence, organizational structure has implications for command and control, for planning and schedules, for training, and for many other aspects of operations.

It is important to keep in mind as we discuss these two different organizational types that they are just that—pure types that we can use to understand how groups work. But these pure types do not appear in the real world—any real organization will exhibit characteristics of both network- and bureaucratically-based interaction.

Social Networks

Social networks are composed of two primary elements: actors and the relationships or linkages among them. Actors can be individuals or collections of individuals such as a military service (e.g., Army or Navy) or a public agency (e.g., the Department of Defense). Understanding a social network means developing an understanding of

the patterns or structure of these relationships, and the influence of these structures on the actors in the networks.³

There are several important assumptions that shape a social network perspective. First among them is the assumption of the importance of relationships in human dynamics. A second assumption is that actors are interdependent, not independent, autonomous units. It also implies that the researcher can achieve full understanding of a given actor's actions if the researcher can map all of that actor's relationships with other actors—that is, its relationships with all other actors in its universe, and all of its relationships with each of the actors in its universe. This also implies that actors are understood as functions of their relationships.

In social network analysis, the observed attributes of social actors (such as race or ethnicity of people, or size or productivity of collective bodies such as corporations or nation-states) are understood in terms of patterns or structures of ties among the units. Relational ties among actors are primary and attributes of actors are secondary.⁴

The emphasis on relationships has important implications in questions of agency and the related dimensions of individual belief. As it defines actors in terms of—and only in terms of—the network of relationships within which they are embedded, a network approach denies a role for purposive action on the part of individuals. This eliminates from consideration any exploration of culture or other ideological structures,⁵ constructs that have been determined to be of high import in the War on Terrorism. As Burt—a proponent of social networks—put it, network theory “bypass[es] the spuriously significant attributes of people temporarily occupying particular positions in social structure.”⁶

The focus on relationships also means that there “must be two to tango.” The identity of any actor is negotiated and is a function of both actors in the dyad. As Rapoport pointed out, some of Spain's success in dealing with ETA, the Basque separatist group, may be that Spain does not see itself as a colonial power, so the relationship that ETA posits (colonial power subjugating ethnic group) is not a recognized one in conversations between the two actors.⁷ Authority and legitimacy thus is situational, and dependent upon the nature and personality of the players in the dyad.

A third assumption is that we can do more than simply identify these relational ties or links. We also can illustrate, in some way, the strength or intensity of the connection among actors. However, as social networks increasingly are modeled computationally, the thing that connects must be not just measurable (for example, strong or

weak) but quantifiable. This usually defines the connectors or links through the observables that are transmitted along the links, such as money transferred or telephone calls made. If the conceptual model defines the link as an intangible, such as friendship or affect, the computational modeler must find a quantifiable surrogate, such as (in this case) telephone calls. Note, however, that the user of the model or its output must be careful that the surrogate is a legitimate substitute or, at the very least, recognize the limitations of the surrogate. A high number of telephone calls may or may not be equivalent to a high level of affect or emotional investment.⁸

Social networks per se are not geospatially located. The actors in the network may be, but the relationships among them—the defining elements of the network—are not. A network can maintain its integrity as the actors move through space. Location may be relevant to an actor's ability to transmit something across a link, but not to the description of what is transmitted. Geospatial location of actors also is not relevant to the ways in which the tie between them constructs the identity of the sender and receiver.

Finally, it is critical to remember that a description of a social network is a snapshot of a set of dynamic relationships. That is, it is a static picture of a constantly changing organizational configuration at some specific point in time. Network change can be measured by changes in the identity of the actors in the network; through variation in the number of connections of a particular type a given actor has with others; and by changes in the intensity of those connections. A set of network descriptions (a time elapsed[?] series) will illustrate the consequences of dynamic properties, but does not itself describe these dynamics.⁹ They must be inferred or imputed from the illustrated consequences. In research work, network models are often used to test theories about the dynamics of relational structures by comparing posited outcomes against actual data. For our purposes, it is important to remember that networks do not tell us anything about why relationships change, although they do illustrate the consequences of those changes.

Bureaucracies (a.k.a. Rule-Driven Organizations)

At the other end of the organizational spectrum from networks are bureaucracies, or rule-driven organizations. The primary elements of a bureaucracy are a rule-defined structure that endures over time (i.e. a stable structure), and the actors who populate that structure. Bureaucracies operate according to "...the principle of fixed and official jurisdictional areas, which are generally ordered by rules, that is, by laws or administrative regulations."¹⁰

Bureaucracies have several defining characteristics: they exhibit a strong division of labor which is codified in rules defining a structure specialized by function; each function has standardized procedures which govern behavior, no matter which individual occupies the position; and an individual's movement through the organization is governed by demonstrated competency which are often codified as rules of a profession. It is worth quoting Talcott Parsons at length here, for he succinctly sets out the key characteristics of bureaucracies.

...an organization devoted to what is from the point of view of the participants an impersonal end. It is based on a type of division of labor which involves specialization in terms of clearly differentiated functions, divided according to technical criteria, with a corresponding division of authority hierarchically organized, heading up to a central organ, and specialized technical qualifications on the part of the participants. The role of each participant is conceived as an office where he acts by virtue of the authority vested in the office and not of his personal influence. This involves a clear-cut distinction in many different respects between his acts and relationships in his official and his personal capacity. It in general involves separation of office and home, of business funds and property from personal property, above all of authority in official matters from personal influence outside the official sphere.¹¹

Networks vs. Bureaucracies

Many contrast networks with hierarchies, particularly in recent popular usage.¹² However, both networks and bureaucracies can be described in terms of hierarchies, although it is much easier to describe bureaucracies in this fashion. A hierarchy is a description of an unequal relationship between two elements of a like kind (e.g. two relationships or two functions), a ranking of those elements. In a bureaucracy, each office (which would be occupied by a person) would have a rank relative to all other offices. Persons would be described in terms of rank only as they are described by their offices. In a network, since all persons are described by the same type of relationship in any given network, what varies is the intensity of the tie. The confluence of a set of ties of some measurable strength would establish the relative standing of the individuals. In this way, we can say that bureaucracies are inherently hierarchical in nature. Networks may describe hierarchical relationships, but are not inherently hierarchical.

I argue that the key distinguishing difference between social networks and bureaucracies lies in the relationship of the actor to the structure. In networks, actors are defined as functions of the relationships that connect them. The relationships are primary. Any given actor is a function of the intersection of a set of relationships. In this way, all actors are particular—each is unique. In bureaucracies, on the other hand, rules define functions that can be filled by interchangeable actors. “The objective discharge of business [in a bureaucracy] primarily means a discharge of business according to calculable rules and without regard for persons.”¹³ The primary focus is on the rule structure, and actors can and do exist separate from the structure.

In networks, actors are defined as functions of the relationships that connect them.

In this approach, actors are defined by activities independent of that rule structure (e.g. education, experience). Agency exists—and, in fact, is a key element of the model. Actors can choose to enter into social contracts of various types, and act according to ideological frames. In this way, a bureaucratic theory of the organization is a logical extension of a long Western European tradition of individualism.¹⁴ This also allows for consideration of the role of ideology and other cultural frames such as religion in social action.

There are several social consequences of the organizational characteristics of bureaucracies.

- First is a commitment to equality of persons. (Note that this is in contrast to a hierarchy or inequality of offices.) This results, as Weber points out, from “the characteristic principle of bureaucracy: the abstract regularity of the execution of authority, which is the result of the demand for equality before the law in the personal and functional sense.”¹⁵ Individual participants are not differentiated by ascribed characteristics such as rank achieved by birth or race or inherent qualities of personality, but must achieve position through performance (merit). In an ideal bureaucracy, each individual enters the system defined only by achieved characteristics. In this way, any particular individual is replaceable by any other who has similar achieved characteristics.
- A second consequence is the importance of the rule set for organizational coherence. Participants’ commitment is not to each other through the development of personal relationships and loyalty but to the rule set. This organizational commitment to the rule set yields the oft-repeated observation that a primary function of bureaucracies is self-perpetuation.¹⁶ It

also means that power and authority reside in an office not in a person. One commands because one occupies a position of command, not because one is a commanding personality. The flip side of this is that one obeys as a condition of the position one occupies, not by virtue of a relationship with a particular individual. The American President and the American presidency are good examples of this. “In American constitutional theory, elections do not confer power on anyone. They merely determine who will occupy a particular office that the Constitution has already endowed with certain powers.”¹⁷ (That it does matter to some degree who occupies the Presidency simply underscores the statement made in the introduction—and to be explored further later—that no organization is a pure representation of one type or another.) The legal argument over the status of the detainees in Guantanamo Bay is another example of the power of the rule set. If the detainees are defined as prisoners of war, one rule set applies. If they are not, another rule set is used.

- A third social consequence of the organizational characteristics of bureaucracies is the strong separation of the personal from the professional persona. In a pure bureaucracy, relationships to other actors are mediated by the rule set and become relationships to functions not to the persons performing the functions. One can respect the office without respecting the person who occupies it. Motivation is through tasking and assignment, and tasks must be congruent with the activity space defined for the position by the rule set. There has been a recent spate of corporate ethics violations which ultimately reduce to a question of the line defining the personal and the professional.¹⁸ The ultimate effect is to reduce the abuse of personal power.
- This leads us to a fourth social consequence. Participants in a bureaucracy are responsible only for completion of the jobs to which they are assigned. They are not accountable for organizational success. (One of the most well-known bureaucratic sayings is “it’s not my job...”.) Some scholars of bureaucracy go so far as to say that bureaucratic organizations are organized around tasks, not missions or goals. Missions may emerge from a collection of tasks, but goals, particularly in public sector bureaucracies, are often so vague that they cannot provide the basis for any realistic action.¹⁹

It has become fashionable to malign bureaucracies.²⁰ In the national security community, this has been particularly true in the

post- 9/11 world. However, it is important to remember that bureaucracies are good for certain types of work. They are extremely well suited for highly complicated, functionally differentiated activities, where critical path completion is an important part of work success. They are particularly effective for the conduct of routine or repetitive activities that can readily be codified into rules for behavior. Although it may seem counterintuitive, bureaucracy also is one of the most efficient means of mobilizing large amounts of people and materiel to accomplish clearly defined ends.²¹ Bureaucracies also locate accountability at the level of the individual. Each individual is responsible for accomplishing his task according to the rules and procedures defined for that function. The organization will succeed if all actors succeed. In this model, organizational failure should be able to be traced back to the failure of some individual to follow the rules. Finally, bureaucracies convey stability over time. The enduring rule set and the principles of meritocracy (based on demonstrated competency) ensure consistent behavior in the face of personnel changes and changing external circumstances.

This discussion of bureaucratic or rule-based structures can be summarized as follows.

- Bureaucracies are systems of rules.
- These rules define offices or positions that are occupied by persons, and their associated activities.
- Persons exist separate from the structure, and are interchangeable from the perspective of the various offices.
- The criteria for occupying an office are based on merit or performance.
- Rules exist over time, and ensure that the performance of any person in the office will be the same as that of his predecessor and successor.
- Stability and routine have become one of the well-known hallmarks of bureaucracies.
- The purpose for an office is defined by the rule set, as is the organizational purpose.
- Any person's accountability is to the rule set for his office, to his job—not to the organizational purpose.
- In this way, authority and legitimacy are objectively defined, and exist independent of individuals.

Operational Implications

Bureaucracies and social networks as we have described them here are examples of pure types. No organization in the real world functions as such. All exhibit some characteristics of both, falling some-

where along a spectrum. The challenge for those of us involved in organizational development, management, or change is to understand the appropriate point on the spectrum of organizational types for a particular organization. Appropriate is a function of task and environment, both of which are functions of time.²² This negates the legitimacy of debates about the goodness of networks or bureaucracies in any abstract sense. It shifts the dialogue to a goal- or task-oriented frame and highlights the fact that an organization's preferred dominant structural type may change over time. Therefore, before moving into a discussion of a specific example (i.e. the US military and the Global War on Terrorism), it will be helpful to outline positive and negative aspects of each organizational type.

Relationship-based groups—groups that are defined by the ties among individuals—are very effective in environments where conditions external to the group are changing rapidly. Because individual actors are not constrained by strong behavioral rule sets, they can vary behavior as external conditions change. Thus, they are excellent in situations requiring variable, tactical responses. They also are well-suited for developing commitment to a cause or goal, usually as embodied in a charismatic individual. The affective ties members of the network can develop with that individual as an individual allow for the emergence of this type of leadership. (Recall that in a bureaucracy, a participant develops ties with an office, not an individual.) That said, using a network approach to understand terrorist organizations does not leave room for an analysis of or response to their ideological base.

... [networks] are excellent in situations requiring variable, tactical responses.

Networks also can serve as effective recruiting tools. Every person is a member of many networks. As Mische says, "Since most participants belong to a variety of social networks at once, they engage in myriad, complex negotiations among the multiple dimensions of their ongoing involvements, which are often embedded in overlapping network formations."²³ Organizations in their early or growing stages of development are well-served by social networks.²⁴

Social networks work well in social spaces that are geography-independent. Technologies such as wireless telephony and the World Wide Web have allowed communication to occur in space-free zones. We do not need to know where the caller or email sender is physically located in order to respond to him, and wireless technology allows him to be anywhere. As the strength of the organization is in the relationship not the end points, the geography-free nature of the relationship frees the organization from geospatial ties.

Bureaucracies are much more tied to spatial location than are social networks. In a bureaucracy, the focus is on the activity of the office as defined by the rule set. Activity is located in time and space.

Bureaucracies are very effective in developing and implementing a consistency of response over time and space. Thus, while they are not terribly effective in situations requiring tactical agility, they are very good in moving organizations toward strategic ends. Bureaucracies' enduring rule sets also allow for effective operation in environments where individual persons move in and out of the organization. Adams uses a description of the social networks developed among members of Congress, participants in the military procurement bureaucracy, and senior executives in certain portions of the industrial sector to give a compelling counterexample of how these networks allow service to unintended organizational ends emerge.²⁵

Social networks, on the other hand, are effective structures for innovation. The weak ties that networks can encourage have been shown to be key in introducing new ideas and frames for action to groups.²⁶ Bureaucracies, with their investment in stability as embodied in rule sets, do not foster innovative behavior.

Bureaucracies manage the division of labor very well. Hence, they are well suited for functionally complicated tasks,²⁷ such as the logistics associated with moving large amounts of materiel or personnel over long distances. Bureaucracies also are effective at assigning accountability to individuals, rather than locating it at the group level. This is important where outcomes like security or safety are valued.

Implications for the Military in the War on Terrorism

Most of the intelligence on the terrorist groups we face in the current war on terrorism tells us that they are network-based organizations. We describe the adversary as a "transnational movement of extremist organizations, networks, and individuals" where the link among them is a "common ideology" (NMSP-WOT). This is a very different characterization of the adversary than the state- and office-centric descriptions of the former Soviet Union prevalent during the Cold War.

In response to the emergence of what has been characterized as a new type of adversary, the Department of Defense has established its own force transformation effort to lead the institution of network-centric operations.²⁸ Network-centric warfare is defined as "an information superiority-enabled concept of operations that generates increased combat power by networking sensors, decision makers, and

shooters to achieve shared awareness, increased speed of command, higher tempo of operations, greater lethality, increased survivability, and a degree of self-synchronization.”²⁹ This is another language for the ability to exploit the tactical advantage that networks provide by allowing local actors to respond to local situations, relying on commitment to a core ideology for operational coherence. However, we must keep in mind that the network structure assumes the ideology—it does not analyze, address, or attack it directly.

As the US military prepares to fight this new type of adversary by redefining its own structure, it needs to recognize implications inherent in the differences between a bureaucratic and a networked organization. The purpose here is not to provide a roadmap for tackling the transformation, but to raise awareness of key areas that need to be considered.

Command and control

Issues of command and control are of central concern in a military environment. As we noted earlier, bureaucratic structures have strong hierarchical dimensions. Offices or positions are ranked relative to the dimensions of power important to that organization. Some of the behavioral rules associated with each office describe response patterns to incoming orders or directives. In this way, any occupant of any office will have some reasonable confidence in the way in which individuals in other offices will respond to incoming information. One thus can task other offices to do certain things, and have some reasonable level of confidence that important ethical boundaries will not be violated. In a network, the response to a piece of incoming information is NOT dependent upon the definition or organizational location of the originating office or the relative definition or location of the receiving office. Rather, it depends upon the nature of the relationship of the individual person who is the sender with the individual person who is the receiver.³⁰ As Cronin points out when talking of the intelligence community, “there is a fine line between progressive devolution of authority (to, for instance, permit covert or black operations of one kind or another) and loss of institutional control such as when mavericks within the organization take the law into their own hands.”³¹ As all persons simultaneously participate in many social networks, the behavioral response to a given piece of information will only partially depend upon the targeted institutional relationship. In this environment, one cannot task a network in the narrow sense of the term. One must persuade individuals based on the personal relationship one has with them.

As an example, we can look at the Global Counterterrorism Network (GCTN) proposed under the NMSP-WOT. This network would be made up of private sector organizations, public sector entities (including elements of the US military), non-governmental organizations, church groups, and the like. The integrating premise of this network is the interest all would have in eliminating terrorism either locally or worldwide. However, this network is actually the confluence of other groups that could be either network- or bureaucratically structured (think of a Venn diagram), each with its own internal logic and structure. Mobilizing this network will require activation of several sets of personal relationships. Consequently, control by the initiator over the actions of any one of the nodes will be much lower than it is in a bureaucratic structure.

Changes in Attitudes and Values

The changes in command and control required by immersion in a network-based rather than a rule-based structure will necessitate significant changes in attitude and values for the US military. These will be reflected in changes in the language used to discuss activities, allies, and the adversary.

Attitudinal changes may be the most important and the most difficult. US personnel must recognize the existence and legitimacy of the multiple agendas of the players in the network. They must be able to develop an approach that emphasizes leveraging points of commonality, rather than one which assumes the obedience to orders that would result from the engagement with a common rule set for behavior. This will require a willingness to discuss with other players the need for action, and avoid the assumption that there is a universal sense of urgency based upon a common goal. For example, while elimination of terrorism and terrorist groups is a primary goal for the military, it is a means to an end for the business community and many non-governmental organizations. As a consequence, involvement in a network means recognition and exploitation of bi-directional communication. US military participants must develop the flexibility and creativity required to simultaneously attain their own ends while demonstrating the value of those activities to others who have different goals. This means an equal emphasis must be placed on listening as is on telling.

Attitudinal changes may be the most important and the most difficult.

The attitudinal changes will be evidenced in changes in language. Clearly, the military will need to learn the language of other communities involved in activities if the military is to be able to demon-

strate how activities can serve multiple ends. Also, internal planning language will have to shift. One cannot task members of a network; rather, one can persuade them. There are no orders given, but suggestions are made. Network members can be convinced to engage in certain types of activities, not required.

Since networks are based on the ties among people, not offices, it is important that individuals develop longevity within the network. Trust in another person (vice trust in an office) is an attribute essential to the effective functioning of relationship-based organizations. Trust in people develops over time. Trust in one individual cannot easily be transferred to another individual. The American business community learned this in the 1980s and 1990s as it was trying to build relationships with the Japanese. Shared experiences and the integration of the personal and business in a single relationship often were key to good business arrangements in the Japanese environment. American business practices of quick deal-making and the separation of the personal and professional worked against the development of meaningful relationships with Japanese counterparts. The investment of time in developing personal relationships that can later be used to attain desired ends may be one of the most difficult attitudinal changes required for results-oriented Americans.

Training

These attitudinal changes and consequent changes in language use will require new training programs and modification of existing regimes.

The most obvious new additions will be training in negotiation skills. This may not be important for all personnel, but will be critical for those occupying points of intersection with other networks, whether that be personnel on the ground in combat areas trying to develop the support of local populations, or those working in the GCTN to engage the cooperation and participation of others in counter-terrorist activities.

A related needed skill will be the ability to recognize the basis on which key relationships are formed. If kinship is the key, the operator must understand how strangers or outsiders are fit into a kin network, and the behavioral implications of the assigned kin role.³² If primary relationships are based on other criteria, such as geography (proximity of village of origin, for example), the operator must understand how those from very far away are treated. In the non-governmental organization community, the (implicit) criterion may be longevity in the community, or the number of countries in which one lived. In all cases, the operator must be trained to recognize the clues

that identify these relationships of interest, understand how they fit together into networks of relationships, and how he (or she) fits into that network. Most of these clues will be implicit or covert. They will lie in such areas as rituals of introduction (what questions are asked at a first meeting?) or in terms of address. Training in listening for and manipulating these cues will be very important.

The Role of Ideology

Ideology plays a role in developing efforts to counter terrorism in a way it did not in the Cold War. In the Cold War, the adversary was a state-defined apparatus in which the roles and offices were defined by (some version of) communism. We were, for the most part, fighting the states and the offices, not fighting persons. If we could destroy the state, we destroyed the adversary.

This fight is different. We are profoundly concerned with ideology for we assume that it is what motivates individuals to adopt terrorism as a means to an end. Purely network-based approaches do not directly address ideology. With their focus on descriptions of relationships and their methodological insistence that relationships define the individual, pure network approaches do not give us insight into the dynamics that lead to the creation or development of those relationships. An important part of the training of troops on the ground, military planners, and leaders will be background on the complex interaction of cultural dimensions that underlie and shape relationships. Religion is certainly one. However, no relationship between individuals is uni-dimensional. While religion may be an important part of a relationship, other factors such as kinship, gender, common language, place of origin, relative wealth, and the like, also play a part. To emphasize a point made earlier, training in understanding how to recognize the factors that make up a relationship of interest will help us define the network of interest and effectively engage with it or destroy it as determined by strategic and tactical objectives.

Ideology can also be an important weapon in the War on Terrorism. If our goal is to undo a set of relationships, we must realize that there will be a new set constructed in its place. If we want that new set to be favorable to US strategic interests, we must work to ensure that its defining criteria are in accordance with those interests. However, the new set proposed cannot be directly counter to the core values of the target populations. An ability to hear the values of target populations as they engage with them can be a key service operators can provide to military and political planners. These same operators must then be trained to express core US values in ways that are not offensive to local populations. This may seem trivial at

first glance—but the communication of such values in both directions is a rather unexamined dimension of military presence. Training US forces to recognize the core cultural values of others and to express targeted US values in an inoffensive fashion is a non-trivial and difficult exercise.

Planning

Several of the issues we discussed above will have impacts on planning. There will be impacts on time scales, on the types of people who need to be engaged, and on the types of activities to include.

This begs the question of geography. To a large extent, just as all politics are local so is all combat local. It is fought on the ground at a particular place at a particular point in time. Most of the clues to relationship identification discussed above are culturally based, and so are location-specific. However, as discussed earlier, the relationships themselves do not exist in space. The hard assets which help to create them may have geographic coordinates (computers, transmitters, wires – let's call these network enablers). The individuals who engage with these enablers and who compose the nodes of the network also exist in space. The assumption of theater-based warfare and geographically defined combatant commands is that attacking some geographic portion of the enablers, eliminating individuals who comprise the nodes or engage with the enablers, or eliminating some large portion of network or of a subnetwork which is geographically collocated will weaken the entire network to the point of collapse.

There are some assumptions here that are important for planning. Eliminating an individual is not a job for the conventional military, for it does not require a force large in size and scope. It is best accomplished by small, specially trained groups such as special operators who have tactical agility and can develop a high level of situational knowledge. At this level particularly, the cultural cues discussed above will become critical. Network enablers may or may not be neutralized by a large force, depending upon the nature of the enablers. Disabling a national power grid can be accomplished either by small, strategically targeted operations or through large-scale destruction. Completely disabling the World Wide Web is not a size and scope of force problem. On the other hand, quelling an insurgency (which can be defined as local or geospatial as it is an attack against a state government which is perceived to be illegitimate) is clearly a job for a geospatially targeted force. As is argued by many regarding our presence in Iraq, that quelling insurgencies can take away one of the intersecting network structures of the international terrorist

network. This eliminates recruitment opportunities and eliminates opportunities for the perpetuation of terrorist acts.

The tension between a geography-free network and the important local and cultural components of the nodes (individuals or network enablers) is one that will need to be managed. This will intersect with the tension between organizing US forces as networks and as rule-driven structures. Integrating into local communities or participating in global networks such as the GCTN will require the development of relationships by specific individuals who are trained for that particular job in that particular location. This is theater-based warfare writ small and writ large. A globally defined command, such as US Special Operations Command (USSOCOM), will need to be able to deploy and infiltrate in different areas of the world for which operators will need cultural (i.e. local) knowledge. The geographic commands also will need to have cultural knowledge of the theaters in which they are deployed. In addition, there must be some geography-free perspective that can manage the global nature of the adversary network; work with a comparable international network, such as the GCTN, to counter it; and coordinate the geographic efforts into a single international thrust.

The incorporation of networks into planning considerations will have significant impacts on schedule. It will both stretch and compress time horizons. As the US endeavors to engage itself in different types of networks, we must recognize that developing relationships takes time. Personnel will need to remain in position for some period of time to develop the trust upon which networks are based, and must believe they can do this without damage to their own career. At the same time networks can be mobilized very quickly and can change direction much faster than rule-based organizations. Any planning process we develop must be highly flexible and able to accommodate change. This may require that authority in certain areas devolve to lower levels than it currently resides. This is another significant attitudinal change required.

Conclusions and Recommendations

The new adversary is not a monolithic organization. The NMSP-GWOT characterizes it as a “self-organizing dispersed formal and informal” association of like-minded individuals and organizations. As such, it has characteristics (and associated strengths and vulnerabilities) of social networks. As a network that leverages other organizations, it has aspects of bureaucracies and state-like entities.

As an international network, the terrorist adversary can be attacked through removal of critical nodes or enablers. In order to do

this, we must understand how networks work and be organized ourselves for tasks of this level of complexity. This means, among other things, freeing ourselves, our thinking, and our organizing principles from geography; keeping individuals in place for periods of time long enough for them to develop trust-based personal relationships with others; and recognizing and accepting the diversity of action that will happen at the individual level. We also must be ready to adopt new methods of motivating our own allies. We cannot task but must persuade. Our own ideology or belief structure must be clearly articulated in a manner that is attractive to others.

The terrorist adversary still retains elements that can be attacked through bureaucratic structures. Network enablers are geographically based and can be attacked in this way. Large forces could be effective here. Insurgencies and other locally-based activities that could be leveraged by the larger terrorist network also are good targets for a conventionally sized and structured force.

The key is to recognize the complexity of the adversary and to respond with a complex force. This will involve several new elements for the US military to consider.

Clearly, the changed skill requirements will have ramifications through recruitment and promotion strategies, as well as on training regimes. If the military is seeking individuals who can lead through persuasion rather than tasking, it will need to look for and develop individuals with skill sets different than those required in a Cold War force. The importance of the role trust plays in networks also means changes personnel rotation policies and the role they play in promotion.

The military will need to be able to foster and support the development of networks without co-opting them – and without seeing them as a threat to formal lines of command. The emergence of the real-time, unofficial communication networks among operators on the ground in Iraq is a good example of the effectiveness of these types of networks, and of what can happen if they become incorporated into a formal bureaucracy. A look at innovation in the private sector, including skunkworks and more recently proposed models of ambidextrous organizations³³ which incorporate both networks and formal management structures, might provide insight into managing this tension for the military community.

The ability to quickly change and redefine force structure, force deployment, and force management techniques may be one of the key enablers of the military of the future. The challenge, therefore, is not to identify the right force structure, but to be able to identify,

communicate, and respond to those elements of time and space that define the appropriate force structure.

Endnotes

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 21. In instances where bureaucracies appear to be inefficient, it is because the task against which efficiency is measured is not that around which the existing rule set is designed. The procurement office of an organization have as its ostensible function the acquisition of materiel for the organization. However, its rule set may be designed to maximize transparency of procedures and to minimize cost. Its tasks may be defined as designing requests for proposals for specified items, disseminating them equitably to the target population, evaluating responses to the requests in the fairest, most transparent manner, and so on. If efficiency is measured against these tasks, a bureaucratic structure can be much more efficient than a network.
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27. Note that a functionally complicated task is different from a complex task. A functionally complicated task is one that can be disaggregated into many separate parts, each of which can function and be described independent of the other. A complex task can be described as one with many interdependent, simultaneously operative activities (see Bar-yam 2004). In the case of a complex task, a network organization may be a more effective management structure as effective organizational functioning requires rapid, ever-changing low-level tactical responses
28. Note that in accordance with its current bureaucratic structure, the Department of Defense has identified a new function it must perform (transformation) and established an office staffed by professionals to do that. This is a classic bureaucratic response. The point of interest here is that the intended outcome is the transformation or abolition of the bureaucracy. It is an open question whether that can be done from within. The literature on skunkworks suggests that these types of transformative organizations must be established and allowed to mature outside the traditional bureaucratic infrastructure. See Albers, David S., John J. Garstka, and Frederick P. Stein. 2000. *Network Centric Warfare* Washington, D.C.: C4ISR Cooperative Research Program.
29 Ibid, p. 2.
30. We saw some of the potential negative consequences of this intermingling of the personal with the professional in Pfc. Lyndie England's trial regarding the Abu Ghraib prison abuses, where her personal relationship with her superior officer surfaced.
31. Cronin, op. cit. P.419
32. During my 18-month stay in West Java, I was assigned the Dutch kin term Tante or aunt. As we were speaking Indonesian, others could not refer to me without a kin term. However, as an unmarried female in my late 20's I did not fit into any of the local kin categories. 'Tante', a Dutch term, marked my foreignness. 'Aunt' labeled me as an adult and elicited a certain level of respect, even from those older than me – respect required by my education level and my comparative wealth.
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